DOCKET FILE COPY ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In The Matter Of	)	
	)	
Amendment Of Part 90 Of The	)	PR Docket No. 93-61
Commission's Rules To Adopt	)	RM-8013
Regulations For Automatic	)	
Vehicle Monitoring Systems	)	

COMMENTS OF ADEMCO

Edwin N. Lavergne
Ginsburg, Feldman and Bress,
Chartered
1250 Connecticut Avenue, NW
Washington, DC 20036
202-637-9191

COUNSEL FOR THE ALARM DEVICE MANUFACTURING COMPANY, a division of Pittway Corporation

Dated: June 29, 1993

TABLE OF CONTENTS

SUMMARY

Teletrac and Ameritech have accumulated over a thousand licenses authorizing the construction of wideband AVM systems throughout the United States. The systems are extremely susceptible to co-channel interference, and only a few have actually been built. The Commission's proposals would protect these "previously licensed" facilities giving the two companies a de facto duopoly over 88 percent of the existing AVM allocation.

ADEMCO opposes any rule change that would facilitate the widespread deployment of the Teletrac and Ameritech systems. The record shows that the systems cannot coexist with the Part 15 devices that currently operate in the 902-928 MHz band. The potential for interference will only worsen as millions of new, more powerful Part 15 devices are introduced into the marketplace.

Adoption of the proposed rules would turn the Commission's regulatory hierarchy inside out. Part 15 is premised on the assumption that unlicensed RF devices operate at such low power that the potential for interference to licensed services is virtually non-existent. If the Teletrac and Ameritech systems become prevalent, the potential for harmful interference would become a likely scenario. Such a fundamental shift in Commission policy would create an impossible enforcement situation and would jeopardize the future viability of the entire Part 15 industry.

There is no reason for such disruption to occur. Inefficient and fragile system designs should not be rewarded with exclusive spectrum assignments, particularly when there are a multitude of other, more efficient ways to provide location and monitoring services that can coexist with current users of the band.

The Commission should be especially wary here since Teletrac and Ameritech have done so little with the authorizations they presently hold. Teletrac's argument that regulatory certainty is necessary in order to attract further investment is utter nonsense. Regulatory uncertainty has rarely delayed the introduction of innovative new telecommunications services.

The Commission must also balance the tangible public benefits associated with existing Part 15 uses of the band against the intangible and speculative benefits that may result from the widespread deployment of the Teletrac and Ameritech systems. Over the past eight years, the market for unlicensed RF products has flourished. Thousands, if not millions, of new spread spectrum and non-spread spectrum cordless phones, wireless alarm systems, local area

Under the circumstances, there is little justification for the Commission to adopt rule changes which would expand the frequencies allocated to AVM at the expense of Part 15 users, let alone rule changes which would facilitate the deployment of what virtually all commenters agree is the worst of today's AVM technology.

The Commission should only authorize the establishment of LMS or similar services if it concludes that such services are capable of coexisting with current Part 15 users of the band. In this regard, if Teletrac or Ameritech argue that their systems can coexist with Part 15 users, the Commission should ensure that the companies may not later start exercising their traditional preemptive rights over secondary Part 15 users if actual interference occurs.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In The Matter Of	)	
	)	
Amendment Of Part 90 Of The	)	PR Docket No. 93-61
Commission's Rules To Adopt	)	RM-8013
Regulations For Automatic	)	
Vehicle Monitoring Systems	)	

COMMENTS OF ADEMCO

The Alarm Device Manufacturing Company ("ADEMCO"), a division of Pittway Corporation, by its attorneys, hereby submits these comments in response to the Notice of Proposed Rulemaking ("NPRM") which was released in the above-captioned proceeding on April 9, 1993. The NPRM proposes extensive changes to the interim rules governing Automatic Vehicle Monitoring ("AVM") systems.

As discussed below, implementation of the proposed rule changes would fundamentally alter, and severely disrupt, the sharing mechanism that has worked so well among licensed and unlicensed services within the 902-928 MHz band for nearly two decades. The record shows that the types of AVM systems which would be authorized under the NPRM, simply cannot coexist with the plethora of Part 15 devices that are currently operating in the 902-928 MHz band. The Commission should revise its proposals to ensure that any expansion of the AVM service is compatible with existing uses of the band.[1/]

[1/] ADEMCO's comments focus on interference issues that affect manufacturers and consumers of unlicensed Part 15 devices. There are also significant interference issues involving licensed services that are not addressed in these comments.

I. INTRODUCTION

ADEMCO is the largest manufacturer of electronic security monitoring equipment in the United States, and is the acknowledged leader in the development of wired and wireless control technology. Many of ADEMCO's products are unlicensed RF devices that operate in the 902-928 MHz band pursuant to Part 15 of the FCC's rules.

ADEMCO's customers outside of the security industry include the Trane Company, which uses ADEMCO's new line of spread spectrum products for automated temperature control in commercial buildings; Schlumberger Industries, which provides water and gas utility meter reading using spread spectrum techniques; and thousands of independent alarm monitoring companies which use ADEMCO's other Part 15 devices for security monitoring and related purposes.

Part 15 devices share the 902-928 MHz band on a secondary, non-interference basis with a variety of licensed services including AVM systems which are licensed on 18 of the 26 megahertz in the band.[2/] Under current FCC rules, AVM licensees must also share the allocated spectrum among themselves. This requires AVM operators to cooperate with each other to avoid mutual interference.

Existing sharing arrangements have permitted a multitude of users to coexist within the band without significant interference problems. At the same time, the public has benefitted from the availability of a wide variety of new commercial products including

---

[2/] See 47 C.F.R. § 90.239 (1992). The existing AVM allocation leaves significant gaps in the spectrum that equipment manufacturers often consider in designing Part 15 devices. Other users of the band include Industrial, Scientific and Medical ("ISM") equipment, Government Radio Location services and Amateur Radio operators.

wireless alarm systems, wireless local area networks, audiovisual distribution systems and a new generation of cordless telephones.

II. THE TELETRAC PETITION

The NPRM was initiated in response to a Petition for Rule-making ("Petition") filed on May 28, 1992, by North American Teletrac and Location Technologies, Inc. ("Teletrac"). Teletrac asked the Commission to license, on an exclusive basis, AVM systems which operate in the 904-912 MHz and 918-926 MHz bands.

Over the past few years, Teletrac has obtained hundreds of licenses for the construction of AVM systems in the 904-912 MHz band.[3/] Hundreds of additional licenses authorizing the construction of AVM systems in the 918-926 MHz band are held by affiliates of American Information Technologies, Inc. ("Ameritech").[4/] Only a handful of these systems have actually been built. Teletrac serves fewer than 6,000 customers in six cities; and, to the best of ADEMCO's knowledge, Ameritech is not serving any customers.[5/]

Numerous parties filed comments opposing the Teletrac Petition. These parties included developers of competitive AVM systems, manufacturers of AVM equipment, AVM operators, and a broad

---

[3/] A summary of Teletrac's existing license authorizations is attached as Appendix A hereto. The summary indicates that Teletrac has a total of 986 licensed transmitters.

[4/] See Comments of Pinpoint Communications, Inc., Attachment A at 4. Pinpoint calculated that Ameritech had over 300 licensed transmitters as of May of 1992. It is not known precisely how many authorizations Ameritech currently holds.

[5/] See Comments of Teletrac in ET Docket No. 93-59 filed June 15, 1993 at 2 where Teletrac indicates that it is operating on a commercial basis in Chicago, Dallas-Fort Worth, Detroit, Houston, Los Angeles and Miami.

range of AVM users including railroads, trucking companies, port terminal facility operators, turnpike authorities, and airports. The broad consensus reflected in the comments was that grant of exclusive use of the spectrum as proposed by Teletrac would foreclose healthy development of robust new AVM technologies and limit competitive entry for new companies proposing to provide innovative new AVM services.

III. THE COMMISSION'S PROPOSALS

The NPRM proposes to allocate the entire 902-928 MHz band to AVM. The definition of AVM would also be expanded to include the monitoring and location of people and inanimate objects, as well as vehicles. Moreover, the transmission of a broad range of "status and instructional messages" would be permitted which will likely create a new messaging service within the band. The new service will be renamed the Location and Monitoring Service ("LMS").

The Commission ostensibly rejected Teletrac's request for exclusivity. Paragraph 21 of the NPRM provides that non-exclusive licensing "is the best means to promote competition within the LMS industry and continued technological advances in LMS services, possibly leading to more robust systems and more efficient spectrum sharing." However, the proposals set forth at Paragraph 22 of the NPRM would give Teletrac exactly what it wants.

Paragraph 22 describes two possible approaches toward licensing wideband LMS systems. Under the first approach, all such systems would be licensed on a non-exclusive basis if "sharing is

immediately feasible." [Emphasis in original.][6] Since the record is replete with evidence that the Teletrac and Ameritech systems cannot share with co-channel LMS systems,[7] this approach will surely have to be dismissed.

Under the second approach, wideband licensees would be required to share spectrum after five years, but "previously licensed" co-channel wideband stations would be protected indefinitely.[8] Since Teletrac and Ameritech already hold over 1,000 wideband AVM license authorizations in the largest 50 metropolitan areas of the United States, the Commission's proposals would, in

ference from other sources which operate within the same bandwidth. Although emissions from low power devices may not completely interrupt a signal, they can corrupt the signal sufficiently to make the necessary multilateration calculations impossible.[9/]

A. Interference Problems Have Already Surfaced Despite The Limited Deployment Of The Teletrac And Ameritech Systems.

Despite the limited deployment of the Teletrac and Ameritech systems, there is already evidence which shows that they cannot tolerate interference from Part 15 devices. The evidence is not theoretical. Just six months ago, Teletrac sent a letter to Sherwin-Williams Company in which it complained of interference from a Part 15 local area network:

> Pactel Teletrac operates a vehicle location system in the greater Chicago area . . . . I recently noticed a signal causing harmful interference to our system and tracked this interference to your plant . . . . This signal is adversely affecting our system and should be removed from the 904Mhz-912MHZ frequency spectrum immediately.[10/]

The interfering signal was caused by a spread spectrum device which was sold to Sherwin-Williams by Cylink Corporation. To ADEMCO's knowledge, the device was manufactured in full conformance with the Commission's Part 15 technical specifications.

[9/] See Ameritech Comments, Technical Analysis at 13-14.

[10/] Letter from Henry L. Razor, Network Field Engineer, Pactel Teletrac to George Martin, Sherwin-Williams Company, dated December 29, 1992.

Significantly, Teletrac's Petition did not analyze the potential for interference from Part 15 devices. Information submitted to the Commission by Ameritech, however, highlighted the existence of a problem. Although Ameritech supported the Teletrac Petition, it acknowledged that Teletrac's interference analysis did "not account for the 'ambient' noise and interference in addition to the single sources of interference" noting that the "most common source of ambient noise is Part 15 Users".[11/]

Many of the parties who filed comments on the Petition also expressed concern that Teletrac's AVM systems would suffer destructive interference from Part 15 emissions. Indeed, the Commission itself has acknowledged that interference to LMS systems from Part 15 users is a "likely" scenario that must be addressed.[12/] The interference problem cannot be addressed without removing Part 15 users from the band. This is an option that is neither proposed nor feasible.

B. Interference Problems Will Only Worsen As New Part 15 Devices Are Introduced Into The Marketplace.

The potential for interference to LMS systems will only increase as millions of new, more powerful, Part 15 devices are introduced into the marketplace. Significantly, the anticipated expansion of the Part 15 market is a direct result of FCC rule

---

[11/] Comments of Ameritech, Technical Analysis at 16.

[12/] NPRM at ¶ 24.

changes that were intended to encourage the development of new technologies in the 902-928 MHz band.

The process began in 1981 when the Commission issued a Notice of Inquiry to consider whether to permit civil use of spread spectrum modulation techniques in certain frequency bands.[13/] The Commission subsequently developed rulemaking proposals for the operation of spread spectrum systems as low-powered, limited range devices under Part 15.[14/]

In 1985, the Commission adopted rules which permitted unlicensed spread spectrum operations in the 902-928 MHz band subject to specified power limits.[15/] Almost immediately, ADEMCO and other manufacturers began exploring potential new applications for spread spectrum technology.

In 1989, in order to further encourage the development of Part

and thereby broaden the opportunities for development and use of this important new technology."[17/]

In response to the Commission's initiatives, manufacturers have invested millions, probably billions, of dollars in the research, development and production of new commercial and consumer products. ADEMCO itself invested approximately $10 million in new product development, and now manufacturers a variety of 902-928 MHz direct sequence spread spectrum systems. These systems are used throughout the country for automated temperature control, utility meter reading and alarm monitoring services.

In addition, a host of new 902-928 MHz consumer devices will be introduced into the marketplace within the next few months. One manufacturer, COBRA, has already introduced a new high powered, digital spread spectrum cordless phone; and it is anticipated that by the end of 1993, other cordless phone manufacturers will have similar products on the market.

The introduction of these new devices is sure to create an untenable interference situation. Again, the Commission has acknowledged the existence of a problem noting that interference such as that experienced by Teletrac "will likely be a continual concern as new consumer-oriented Part 15 devices . . . are introduced."[18/] Frankly, in view of the Commission's awareness of the problem, it is difficult to understand how it could even <u>propose</u> to

---

[17/] <u>Report and Order</u>, Gen. Docket No. 89-354, 5 FCC Rcd 4123 (1990).

[18/] NPRM at ¶ 24.

move forward with the LMS licensing scheme described in the NPRM.

V. THE COMMISSION'S PROPOSALS ARE CONTRARY TO THE UNDERLYING PREMISE OF PART 15.

Because the Teletrac and Ameritech systems are extremely susceptible to interference -- even from extremely low power RF devices -- adoption of the proposed rules would be contrary to the underlying premise of Part 15. The Commission's rules require Part 15 devices to accept interference from, and not cause interference to, licensed operators.[19/] While Part 15 devices do sometimes experience interference, generally such interference is not so severe or recurrent as to cause major problems.

Part 15 devices almost never cause interference to licensed services because the FCC's rules are premised on the assumption that such devices will operate at such low power that the potential for actual interference to licensed services is virtually non-existent. Any other approach toward interference avoidance would be not be practical.

This regulatory philosophy has been articulated by the Commission on many occasions. For example, in its comprehensive rewrite of the Part 15 rules in General Docket No. 87-389 the Commission stated:

> As part of our plan to provide flexibility for the development of new Part 15 equipment, we are adopting technical standards that we believe will minimize the probability that harmful interference will be caused to authorized radio services while still permitting

---

19/ 47 C.F.R. § 15.5(b) (1992).

> effective economical operation of such devices in most frequency bands. [Emphasis added.][20]

In that same proceeding, the Commission specifically addressed the probability of interference in the 902-928 MHz band:

> We also believe that the probability that Part 15 operations will cause interference to authorized services in the ISM bands above 900 MHz is low . . . [T]he potential for the Part 15 device to receive interference is much greater than the potential for the Part 15 device to cause interference. Because of the possible applications which exist for viable use of these bands, the proposed rules are being implemented. [Emphasis added.][21]

Implementation of the proposals contained in the NPRM would turn the Commission's Part 15 regulatory hierarchy inside out. Harmful interference to licensed LMS services within the 902-928 MHz band would become likely. Such a fundamental shift in policy would create an impossible enforcement situation and would jeopardize the viability of the entire Part 15 industry.

VI. THE COMMISSION'S PROPOSALS WOULD CREATE AN IMPOSSIBLE ENFORCEMENT SITUATION.

Implementation of the FCC's proposals would put the Commission in an impossible enforcement situation because there is no effective way to stop unlicensed devices from interfering with LMS facilities. Faced with the prospect of millions of cordless phones, wireless LANs and other devices operating in the band, Teletrac will be overwhelmed by what it has already characterized

---

[20] First Report and Order, Gen. Docket No. 87-389, 4 FCC Rcd 3493 at 3496 (1990).

[21] Id. at 3502.

as "harmful interference" which "adversely affects" its system. What will the Commission do?

The Commission could decide to go strictly by the book. Section 15.5(c) provides that the operator of a Part 15 device "shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference."[22/] Under this approach, the Commission would have to dis-patch a team of enforcement officials every time that Teletrac completes a new LMS facility.

The establishment of such an enforcement program would be ridiculous, not to mention patently unfair. Home security systems would have to be dismantled, garage door openers confiscated and office computer networks shut down. If this happens, the entire market for unlicensed products used within the band would collapse. Consumers would lose confidence in the marketplace, manufacturers would be unwilling to invest in new Part 15 technology development and the FCC would be faced with a barrage of complaints. Moreover, given the large number of Part 15 devices on the market, even the most aggressive enforcement program would likely fail to curb interference to licensed services.

VII. THE COMMISSION'S PROPOSALS ARE PATENTLY UNFAIR.

ADEMCO and other Part 15 manufacturers never had any warning, nor could they reasonably foresee, that just a few years after encouraging Part 15 development in the 902-928 MHz band, the Com-

---

[22/] 47 C.F.R. § 15.5(c) (1992).

mission would propose to greatly expand the scope of permissible activities within the band to accommodate the widespread deployment of technology that can only function in an extremely quiet RF environment. Indeed, such a proposal is flatly inconsistent with statements made by the Commission at the time it was encouraging new Part 15 technology development within the band.

In 1984, when the Commission first proposed rules to authorize unlicensed spread spectrum operations, it noted that the 902-928 MHz band appeared to provide an "excellent proving ground" for such operations because of the low probability of interference to licensed services. Although some ISM manufacturers objected to the proposed authorization, the possibility of interference being caused to AVM services was not even mentioned:

> The majority of comments favored allowing spread spectrum systems to operate in these bands . . . . Although GE and RCA have presented arguments against the shared usage of the ISM bands, we do not feel that they outweigh the considerable advantages to be gained from sharing these bands with spread spectrum systems. If spread spectrum systems can contend with the heavy interference from the other users of the band, then these bands could offer an excellent proving ground for high power spread spectrum applications.[23/]

The Commission's 1984 proposals were based, in part, upon a study conducted by the National Telecommunications and Information Administration ("NTIA"). In a "Problem Assessment Matrix", which

---

[23/] Further Notice of Inquiry and Notice of Proposed Rulemaking, Gen. Docket No. 81-413, 98 FCC 2d 380 at 389-90 (1984).

was included with the study, the potential for Part 15 devices to interfere with AVM services was classified as "No Problem".[24/]

In 1985, when the FCC authorized spread operations in the 902-928 MHz band, the Commission noted that its new rules were being kept "deliberately conservative in order to minimize any possibility of interference to . . . existing services."[25/] Later, when the FCC was considering the authorization of additional Part 15 services within the band, the Commission discussed the possibility of interference to ISM services. Again, the possibility of interference to AVM services was not mentioned:

> The new frequency bands proposed in this Notice are now allocated primarily for Industrial, Scientific and Medical (ISM) operations under Part 18 of the Commission's rules. ISM devices are a source of interference but normally are not susceptible to receiving interference from other sources. These new bands also are allocated to other users of the spectrum on a secondary basis.[26/]

Amateur radio operators subsequently filed a Petition for Reconsideration in which they argued that the Commission did not correctly evaluate the impact of the new Part 15 rules on amateur radio services. However, the possibility of interference being caused to AVM systems was not raised by any party.

[24/] Bohdan Bulawka, "Spectrum Resource Assessment in the 902-928 MHz Band", NTIA Report 80-46, September 1980, Table 16.

[25/] First Report and Order, Gen. Docket No. 81-413, 101 FCC 2d 419 at 427-28 (1985).

[26/] Notice of Proposed Rulemaking, Gen. Docket No. 87-389, 2 FCC Rcd 6135 at 6138 (1987).

In sum, at the time manufacturers invested in the development of new Part 15 products, they were aware of the interim rules governing AVM systems. They were also aware that those rules might be made permanent, and that the number of AVM systems operating within the band might become more prevalent. There was never any indication, however, that a radical expansion of the band along the lines proposed in the NPRM would be forthcoming. To the contrary, the Commission made it clear that Part 15 manufacturers should be concerned with "established" services within the band:

[redacted]

of co-existing with other users of the band. AMTECH Corporation, for example, uses spectrum in the 902-928 MHz band for automatic toll collection and related vehicle monitoring purposes. Although

avoid such a result if at all possible under Section 7 of the Communications Act which provides that:

> It shall be the policy of the United States to encourage the provision of new technologies and services to the public. Any person or party . . . who opposes a new technology or service proposed to be permitted under this chapter shall have the burden to demonstrate that such proposal is inconsistent with the public interest.[34]

The Commission should be especially wary here since Teletrac has done so little with the AVM authorizations it presently holds. Moreover, there are a wide variety of other technologies, which do not depend on the 902-928 MHz band, that can be used for monitoring and tracking purposes. For example, Loran C technology, originally developed for coastal navigation, has increasingly been applied to terrestrial and aeronautical applications. In addition, satellite networks, FM subcarriers, existing cellular radio facilities and SMR networks all offer alternatives to the Commission's LMS proposals.

B. The Tangible Public Benefits Associated With Existing Uses Of the Band Outweigh The Speculative Benefits Which May Be Associated With The Commission's LMS Proposals.

Given the fact that there are other, more efficient, ways of providing location and monitoring services, ADEMCO submits that tangible public benefits associated with existing commercial

speculative benefits that may result from the widespread deployment of the Teletrac and Ameritech technologies.

Just eight years ago, the Commission initiated the first of a series of rulemakings designed to encourage investment in new Part 15 technologies.[35/] Few would argue with the proposition that the Commission has accomplished its objective. Manufacturers have developed and consumers have purchased thousands, if not millions, of new unlicensed RF devices designed to operate in the 902-928 MHz band. These devices include both spread spectrum and non-spread spectrum local area networks, cordless telephones, field disturbance sensors, and alarm monitoring systems. The market for such devices has flourished, and is expected to continue flourishing notwithstanding the secondary status of Part 15.

By comparison, two decades after the adoption of "interim" rules which were intended to foster the development of numerous competing technologies, the AVM industry is still in its infancy. Under the circumstances, the Commission would be hard pressed to justify any rule changes which would expand the frequencies allocated to AVM at the expense of Part 15 users, let alone rule changes which would facilitate the deployment of what virtually all commenters agree is the worst of today's AVM technology.[36/]

[35/] Notice of Inquiry, Gen. Docket No. 81-413, 87 FCC 2d 876 (1981).

[36/] See e.g., AMTECH Comments at 40 ("[Teletrac's] system is a particularly poor one to be rewarded with large portions of spectrum"); Pinpoint Reply Comments at 2 ("[T]he Teletrac system is inadequately designed, intolerant of interference and a poor spectrum neighbor"); and Missile Group Old Crows Comments at 2 ("Many (continued...)

C. Teletrac And Ameritech Appear To Be Warehousing Valuable Spectrum.

Teletrac and Ameritech each hold hundreds of LMS authorizations. Yet, only a few of the authorized facilities have been constructed. A critical question must be asked. Why have not Teletrac and Ameritech exploited their licenses?

Teletrac and Ameritech argue that because of their interim nature, the existing rules create considerable uncertainty among investors. Regulatory certainty, they say, is necessary in order to attract further investment in LMS.[37] This is utter nonsense.